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ABSTRACT

Observing that the explosion of the space shuttle "Challenger" had a profound impact upon the American public, this paper argues that its most direct impact was upon the National Aeronautics and Space Administration (NASA). Specifically, the paper argues that the explosion was a crisis that resulted in loss of legitimacy for the space agency. Definitions of two terms are provided. (1) A crisis is defined as a major event in an organization's history that results in change. (2) Legitimacy is defined as a status conferred upon an organization by external social actors that results in a larger social justification of the organization and its activities. The paper then examines the Challenger explosion as a crisis in legitimacy and explores NASA's behavior under crisis conditions. The paper next discusses crisis as loss of legitimacy and reviews NASA's efforts to establish legitimacy both before and after the tragedy. The paper concludes that specific target goals, such as a mission to Mars, are necessary if NASA is to repair the serious damage caused by the "Challenger" explosion and to reestablish itself as a legitimate institution. (FL)

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The Challenger Tragedy and Search for Legitimacy

Implications from an Organizational Communication Perspective

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Abstract

While the Challenger tragedy had a profound impact upon observers, the most direct impact was upon NASA. In its basic elements, the explosion was a crisis which resulted in loss of legitimacy. This essay reviews the crisis of the tragedy and identifies how legitimacy suffered from both the actual explosion and the dialogue over the adequacy of the system. The author argues that for NASA to return to its former status, it must present itself as a rational system with worthy goals.

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The Challenger Tragedy

and Search for Legitimacy

The tragedy of the space shuttle Challenger had a profound effect upon both the National Areonautics and Space Administration and the American public. NASA represented the ultimate in contemorpary successes producing high technology spin-offs, celebrities, and promises for the future. The explosion of January 28, 1986 brought both observers and NASA down to earth by painfully demonstrating the program's great potential for failure and loss of life. While the effect upon observers was profound, the effect upon NASA was both immediate and long term.

The space shuttle explosion represented a crisis in NASA's legitimacy. The unexpected nature of the event was highlighted by the NASA commentator's words some 7 seconds after the explosion: "Flight controller here looking very carefully at the situation. Obviously a major malfunction" (Reinhold). This terse recognition of the magnitude of the disaster set the stage. The agency, which could place a man on the moon was, at the least, unprepared to deal with failure.

This essay argues that the Space Shuttle tragedy was a crisis for NASA which resulted in loss of legitimacy. This crisis was, in part, percipitated by NASA's earlier attempts to enhance legitimacy. The explosion of Challenger, however, significantly reduced NASA's standing as a legitimate institution. The crisis also created a specific set of stresses for NASA's authority, decision, and

communication systems and limited its ability to respond. Efforts to deal with these stresses and re-establish legitimacy will be examined. Finally, the effectiveness of these efforts will be assessed.

Crisis Event

A crisis is a major event in an organization's history which results in change. According to Smart, "crisis occurs when environmental threats pick out organizations and bring them face to face with their weaknesses" (10). Organizations which are most susceptible to crisis function within highly threatening or dynamic environments. Hermann suggests three characteristics of crisis: 1) the organization's high priority values are threatened, 2) the amount of time in which a response can be made is restricted, and 3) the organization has not anticipated the event (1963).

Hermann's model of crisis has been criticized by Billings, Milburn, and Schaalman on the grounds of isomorphism. They suggest that crisis must be conceptualized as a perception by decision maker(s) (303). Billings, Milburn, and Schaalman include a trigger event in any model of crisis. The trigger event first calls attention to the problem by demonstrating a discrepancy between the existing and the desired state. Uncertainty, they argue, is central to surprise. The ability to make some predictions or plans concerning a crisis indicates that it is of less magnitude; i.e. there is less uncertainty about appropriate responses.

In discussing the consequences of crisis, Snyder

proposed a continuum of crisis response with positive member or sub unit integration at one poll and destructive segregation on the other. Members facing crisis, therefore, may develop higher levels of cohesion and work together toward resolution or may engage in higher levels of conflict with a corresponding limitation in their ability to resolve crisis. Hermann used Snyder's continuum in proposing fourteen interrelated propositions and a spiraling process of crisis responses. (1) This spiral process includes several noteworthy elements particularly contraction of authority, conflict, and reduction of communication channels. Contraction of authority, for example, results in member or sub unit conflict and reduction of communication channels leading to yet further authority reduction. Hermann proposed that these interrelated processes are likely to escalate further reducing the organization's ability to respond to the crisis in an effective manner (1963).

A second construct necessary to understand the Challenger tragedy and its effects on NASA is legitimacy. Dowling and Pfeffer argue that organizations must "establish congruence between the social values associated with or implied by their actions and the norms of acceptable bahavior in a larger social system" (122). Legitimacy is a status conferred upon the organization by external social actors resulting in a larger social justification of the institution and its activities. A crisis in legitimacy "results when either discourse becomes an inadequate

justification of and/or major institutional responses do not fulfill legitimate expectations" (Turkel 165). Legitimacy, then, is related to organizational success to the degree that the institution is dependent upon its environment.

The Shuttle Explosion As Crisis

The trigger event for NASA's crisis was the explosion of the $1 billion Challenger, and the death of all seven astronauts. The discrepancy between the desired state of a smooth and successful mission and the actuality of the explosion was extreme. The explosion took on added significance due to NASA's highly visible status within the environment. Historically NASA has been closely observed by environmental actors including media, politicians, and the American public. The flight of the Challenger had received added publicity from the Teacher in Space Program. With increased visibility comes a greater likelihood that environmental elements will be critical of organizational mistakes or weaknesses. Favorable status and funding of NASA projects, for example, fluctuates with Administration policy, budget constraints, and NASA's own successes (Body 27).

The threat to NASA came as a consequence of the trigger event in the form of questions, suspension of operations, and severe criticism (Boffey "Troubling Questions"). The operating goal of continued and accelerated space exploration and exploitation, including some 24 scheduled flights in 1986, was immediately suspended (Boffey "Troubling Questions"). NASA's reputation as a rational,

successful, and technologically superior institution was immediately suspect. The participation of Christa McAulliffe, originally publicized as a way of making space accessible to the average American, served to sharpen the tragedy. The subsidiary goal of an economically self sufficient shuttle progam was severely compromised due to delays (Rosenbaum). Following the tragedy, critics began questioning NASA's role as an independent agency, suggesting that America's space program might best be positioned within the Air Force and that manned missions were an unneccessary risk (Rosenbaum). In short, NASA was in jeopardy as an independent, non-military organization.

The second crisis element, surprise, was evident in the unanticipated nature of the tragedy. With previous successes, NASA began to see the possibility of a major tragedy as less and less likely. The typical approach within NASA was "It flies and nothing happens. Then it is suggested that the risk is no longer so high for the next flight" (Zaldivar). NASA engineers seemed confident enough in the design of the Shuttle to scrap plans for abort systems, including ejector seats, thrust terminators, and abort motors in favor of weight and budget considerations. According to Astronaut Robert Crippen, the O-ring problem on the booster rockets had been mentioned, but not presented as a potentially serious problem ("Astronauts Lambast"). It is unclear, therefore, whether NASA was simply unprepared for an improbable, but possible tragedy or whether an explosion on a manned flight was inconceivable. The response of NASA

Administrators to the tragedy was generally characterized as "disbelief" ("Transcripts of NASA").

The third crisis element, short decision time, occurred with the interruption of NASA's launch schedule, the uncertainty associated with the cause, and the safety of the other shuttles. An explanation of the tragedy was necessary immediately for returning to the flight schedule, improving safety, and relieving psychological discomfort. Jessie Moore, NASA's Associate Administrator in a news conference two hours after the tragedy, however, refused to speculate on causes ("Transcripts of NASA"). Media attention focused directly on possible explanations including ruptured fuel tanks, falling ice, and failure of the O-rings. Film footage, monitoring devices, computer tapes, and cockpit voice recordings all failed to provide an immediate explanation.

NASA also faced short decision time regarding response to the media and public. Initially, Jessie Moore announced that "Data from the shuttle instruments [Sic] are being impounded for study" ("Transcripts of NASA"). This action was followed by a seizure of film belonging to news organizations. While NASA Administrators admitted that such action was probably not legal, they claimed that important film recordings might be "damaged or lost" (Moffett and McGinley). Subsequent gaffes included contradictory statements by NASA officials and leaks of information damaging to the agency. The agency's unwillingness or inability to respond immediately to the demand for

information and explanations regarding the cause of the disaster were all the more confusing in light of NASA's history of openness with the media (Moffett and McGinley). The impounding of film and refusal to discuss the tragedy did not seem adequate or logical and focused attention on the confusion and bewilderment of NASA Officials.

NASA Under Crisis

Hermann's model of crisis response suggests a circular spiral of conflict within the organization, retraction of authority, and breakdown of communication channels. Observers reported high levels of conflict within NASA even before the tragedy. "Organizational components that were supposed to work together-the Marshall, Kennedy, and Johnson space centers, have become like quasi independent baronies uncommunicative with one another and with the top" (Brody). Much of this defensive climate has been attributed to an overly optimistic launch schedule which resulted from efforts to make the shuttle economically self sufficient if not profitable. The defensive and conflict filled climate was in direct contrast to the successful days of the Apollo program characterized as "triumphs of cooperation and communication" (Tompkins 24).

After the tragedy, conflict within NASA rapidly escalated and became overt. Initially, Administrators seemed stunned by the tragedy, unable or unwilling to assign fault and concerned only with discovering the cause. Moore, in announcing the appointment of NASA's Interim Review Board, refused to speculate on the cause indicating only that

"there appeared from [the] photos that there was an explosion" ("Transcripts of NASA"). Two days after the Moore statement, experts on the booster rockets indicated that there was little chance of a malfunction and that given sufficient warning, the crew might have attempted an emergency landing. This view was immediately disputed by other NASA officials (Wilford). Against this back-drop of contradications, President Reagan announced the appointment of the Rogers Commission on February 3. The independent board "would review the circumstances surrounding the accident to establish the probable cause or causes" and "develop recommendations. . ." (Boyd). As the Commission began its investigation, conflict between Astronauts and NASA administration, NASA and contractors Morton Thiakol and Rockwell International, and NASA and the Rogers Commission emerged.

Attention was focused on the booster rockets produced by Morton Thiakol. On February 5, spokesmen for Thiakol indicated that the rockets had not been designed for use under the extreme cold conditions of January 28 (Sanger "Cold and Vibration"). This news came amid reports that for two years, NASA engineers had been concerned about the dangers of vibrations and pressure changes on the booster rockets (Boffey "NASA was Worried"). On February 27, the Commission announcement that Thiokol engineers had been pressured into changing their recommendation against launch (Boffey "Shuttle Officals"). A similar exchange occurred with Rockwell executives who insisted they had opposed the

Challenger launch on the grounds of icing. NASA claimed that no such objection had occurred. Rockwell, however, produced tape recordings of conversations with NASA which verified their claims (Boffey "Shuttle Officals"). Thiakol and Rockwell successfully avoided sole responsibility for the tragedy. Moreover, NASA administrator efforts to pressure for launch seemed irrational and irresponsible in light of the subsequent tragedy.

Initially, NASA responded with openness to the Commission's inquiries, although administrators seemed poorly prepared and inadequately informed (Sanger "NASA Seemed Suprised"). As the Hearings progressed statements continued to contradict. On Feburary 17, the conflict between NASA and the Commission peaked with William Rogers requesting that certain top administrators be excluded from the investigation (Boffey "NASA Head"). The Commission suggested by its actions that adminstrators were hindering the investigation to protect their own positions. This request also refocused the Commission's position from working within NASA's established structure to a much more adversarial role (Sanger "Agency Rebuts). The Rogers Commission was concerned with discovering the cause(s) of the tragedy, technical, human, or both. NASA Officials, however, seemed more concerned with protecting their positions and the reputation of the program.

The third group involved in conflict were the astronauts. In the Commission Hearings of April 3, astronauts testified that too little had been said about

technical problems and proposed an Independent Safety Office to insure that safety would receive adequate attention ("Astronauts Lambast"). Chief Astronaut, John Young, in an internal memo dated March 4, criticized NASA's decision system: "If the management system is not big enough to stop the shuttle program whenever necessary to make flight safety corrections, it will not survive and neither will our three shuttles or their flight crews" (Zaldivar). Young blamed "launch schedule pressure" for allowing the dangerous Challenger system to fly (Zaldivar). NASA officials countered by arguing that "flight safety had been a primary concern for 25 years" (Sanger "Agency Rebuts"). The astronauts, as the most visible of NASA's various groups, had high status and were the individuals most vulnerable to faulty design or human error. Their criticism of NASA was personal, direct, and credible.

Hermann's second element in crisis response is reduction or contraction of authority. The initial reactions of top Administrators to the tragedy drew criticism and prompted the appointment of a new authority system. The most controversial decision was to impound information and refuse to discuss possible causes. Reagan's appointment of the Rogers Commission, therefore, created a level of authority above that of the top NASA adminstrators who were acting in ways many considered inappropriate. Moreover, the Commission was composed of highly credible and competent individuals from a wide variety of fields. This status was brought to the investigation. To reduce the uncertainty

associated with the tragedy and the investigation, the Commission adopted a process which was open to public scrutiny.

Initially, NASA cooperated with the Commisssion providing documents, technical data, and explanations about administrative procedures (Sanger "NASA Seemed Suprised"). However, as contradictory statements, problems in decision and managerial systems, and human error began to emerge in Hearing testimony, the Rogers Commission moved toward an adversarial relationship with NASA. The decision to exclude administrators from the Hearing established the Commission's authority and credibility as superior to that of NASA. Those administrators involved with the tragedy were disassociated with the investigation. This shift in authority helped establish the credibility, openness and legitimacy of the investigation.

The most direct and strategic shift in authority, however, came with the identification of top administrators as scapegoats. With the disclosure that human error was a partial cause, NASA administrators were publicly and dramatically identified as likely targets for blame. The openness of the Hearings served to publicize and dramatize their mistakes. By visibly assigning responsibility for failure to individuals and removing them, NASA attempted to disassociate itself from responsibility (Pfeffer and Salancik, 1978, 263). The shift of Associate Administrator Jessie Moore came early in the Rogers Commission investigation. Similar moves soon followed with retirement

of senior administrators Lawerence Mulloy and George Hardy. The search began for Moore's replacement; the New York Times quoted officials as looking for "someone not involved in the current troubles" (Boffey "Shuttle Details Emerge"). This search concluded with the selection of James Fletcher, former head of the Shuttle program.

The third element in Hermann's model of crisis is reduction in channels of communication. In the "witch hunt" atmosphere created by the Rogers Commission and with the suspension of flights, routine communication within NASA was disrupted. Employees of the Marshall Flight Center, for example, were characterized as "reluctant to talk," "depressed," "Hostile," "fearful, and "resentful" (Boffey "Fear and Zeal"). Formal channels of communication were disrupted to the point that employees sent an "annonymous letter highly critical of Marshall's top management" to the Commission (Boffey "Fear and Zeal").

Initially, NASA officials responded to the tragedy by inappropriately reducing the amount of public information. The information moritorium continued until the intervention of the Rogers Commission. After the change in authority relations, information concerning the tragedy was channeled through the Rogers Commission. The Commission facilitated the release of information which NASA seemed reluctant to disclose publicly. The Commission held suprisingly open hearings. Critics responded by calling the investigation a "witch hunt" and by suggesting that the Commission had concluded that the booster rockets were faulty before all

the information was available (Jones). William Rogers responded by noting that the situation called for "full disclosure," and he personally complemented the media coverage of the tragedy calling it "accurate and fair" (Jones).

The Rogers Commission, therefore, functioned to facilitate the flow of information from various sources who might otherwise been reluctant to communicate. Astronauts, engineers, ground crew supervisors, and members of Morton Thiokol and Rockwell International found a forum for directing information to both decision-makers and the public generally. This dialogue over NASA's operations was both open to the public and comprehensive in its scope. Without such an independent body, it is likely that much information damaging to NASA, would never have reached the general public.

Crisis as Loss of Legitimacy

Legitimacy is a status conferred upon organizations by their environments. This status relates to the value of the organization for important environmental actors. Legitimate organizations may be rational; produce goods, services, or by-products valued by the environment; and/or may be related to other generally accepted social values (Meyer). Those organizations highly dependent upon favorable evaluation by environments are likely to emphasize legitimacy strategies over those which are relatively insulated from their environments. Loss of legitimacy occurs when either discourse is no longer sufficient and/or internal operations

do not correspond with legitimate expectations on the part of important environmental actors (Turkel). Expectations for internal operations concern both success in achieving a valued goal and use of rational structures and systems (Meyer). The discourse employed to establish or maintain legitimacy will attempt to present the institution as rational and link its goals with established social needs and values.

NASA's goal of space exploration is generally valued by observers. The major criticism concerns the cost and its concomitant impact on other governmental activities such as military and social spending and taxes ("Star Truck"). One of NASA's responses to this criticism was the development of the Shuttle as a reusable "space truck" for low cost space exploitation ("Star Truck"). Design considerations frequently emphasized cost reduction over expensive safety features ("Star Truck"). An accelerated launch schedule was implemented to capture 90% of the domestic space business (Brody). The program of Shuttle passengers, culminating with Crista McAulliffe, was designed to demonstrate the accessibility of space to average Americans. This "human participation in space" helped to build "prestige abroad and enthusiasm at home" ("Star Truck"). These activites were initially designed to enhance NASA's overall legitimacy. Accessibility meant wider involvement and wider social approval while limited costs reduced NASA's vulnerability to criticism. Testimony from the Rogers Commission suggests that these programs stressed NASA's ability to perform

(Brody).

NASA's efforts to make the Shuttle economically self sufficient and accessible, however, were severely compromised by the tragedy. Moreover, the discourse surrounding the tragedy depicted NASA's decision and communication systems as irrational, irresponsible, and unable to perform. The explosion of Challenger was all the more disturbing in light of the fact that administrators were aware of the flaws, yet pushed for launch anyway. The removal of NASA administrators from the investigation process indicated that they were continuing to act in illegitimate ways. NASA's legitimacy, therefore, suffered both from the actual failure or inability to perform and from the consequent dialogue which depicted the administrative systems as seriously flawed.

The efforts to re-establish legitimacy following the Challenger explosion center around both discourse and performance. Four efforts can be identified: open hearings designed to enhance credibility, shifting of authority, creation of a rational system, and actual performance.

The open Hearings conducted by a credible and independent body were an effort to generate a rational discussion about the tragedy and recommendations to enhance future performance. The Hearings were detailed in their investigation of both technical and human errors. The openness of the Rogers Commission was necessary to reduce levels of uncertainty for observers and the crisis conditions associated with uncertainty and to create a new

sense of rationality. The explanations to come from the Hearings, however, were inadequate justifications for the tragedy in that they enhanced the perception of NASA as irrational. Information about severe conflict, unsuccessful attempts to assign blame to contractors, contradictory statements, and the removal of top administrators from the investigation served to punctuate the explosion as the inevitable outcome of an irrational system. The conclusions of the Rogers Commission regarding human error as a cause only served to further compromise NASA's legitimacy.

A second effort to regain legitimacy occurred with the shift in authority. With contradictory statements, a moratorium on information, and the impounding of news film, NASA administrators lost credibility and prompted the appointment of the Rogers Commission as a new authority system. Subsequently, NASA officials attempted to shift at least part of the blame to contractors. This strategy failed when contractors were able to produce documentation of both warnings against launch and pressure from NASA to change launch recommendations. The Rogers Commission, however, was successful in identifying top administrators in NASA and to a lesser degree in Morton Thiakol as the source of human error (Lewis). These individuals were removed from NASA and Thiakol, therefore symbolically disassociating the institution from blame. Those actions considered illegitimate, then, became the responsibilty of individuals and not of NASA, the institution. The success of scapegoating, however, seems to reside in the degree to

which observers accept individuals as responsible for problems. (Pfeffer and Salancik) In this instance, problems were so widespread as to suggest failure in communication and decision systems rather than in the incompetence of individual managers per se (Lewis).

The third effort to re-establish legitimacy involved creating the impression of renewed rationality within NASA's system. The Rogers Commission recommended creating new structures which involve engineers and astronauts in launch decisions (Boffey "Fear and Zeal"). Astronauts are the most visible of NASA's constituent groups, and those most at risk. Engineers are central to NASA's technology and logically would have important insights into operations. Both groups are rational technical experts who are central to actual performance. The involvement of tehnical experts represents a shift in authority placing more rational and legitimate constituencies in higher levels of power.

Finally, NASA's ability to perform will be both a factor in and an indication of renewed rationality. Performance will require a reduction in levels of conflict and reestablishing damaged communication channels. Additionally, success will be related to the authority which follows the Rogers Commission. The degree to which James Fletcher is able to recreate the "cooperation and communication" of Apollo days will be related to both success and a renewed sense of legitimacy (Tompkins 24).

Much of the criticism following the Rogers inquiry concerned NASA's "dangerously confused [and] ill-defined"

performance goals ("Star Truck"). NASA's commercial, military, pure science and applied science activites required highly diverse capabilities. The Reagan Administrations's recent decision to phase out commercial use of the Shuttle is an effort to address the performance issue. By significantly narrowing the scope of its activities to one customer, the military, NASA's ability to perform successfully is enhanced. Fewer customers translates into fewer missions of less diverse nature, and less performance pressure. Limiting the scope of performance, however, subsequently limits the appeal of the space program. With servicing a wide array of customers, NASA's appeal and utility is also diverse. Moreover, military payloads have traditionally been secret, while commercial satellite deployments, space walks, and scientific experiments have been well publicized. NASA's activities, therefore, are likely to be both less visible and have less diverse support. In addition to a loss of visibility, NASA has lost the legitimacy of the pure science and space exploration activities associated with a civilian space program. NASA's future is now more closely linked to the controversial arena of space militarization.

Conclusions

Several conclusions regarding crisis and legitimacy arise from the NASA case. First, the crisis was percipitated by a trigger event. Second, the crisis elements of conflict and reduction in channels of communication existed within NASA prior to the actual tragedy. There is also evidence to suggest that many of NASA's efforts prior to the explosion were designed to enhance legitimacy but that these efforts stressed NASA's ability to perform. Third, NASA encountered the crisis conditions of threat, surpise, and time constraint specified by Hermann. It is also evident that NASA responded with conflict, reduction and contraction of authority, and reduction in communication channels. One consequence of the crisis was a dialogue over the adequacy of internal systems as an attempt to renew legitimacy with an open and rational investigation. The Rogers Commission dialogue, however, facilitated the perception of NASA system as inept and unprepared and, therefore, illegitimate. This dialogue was followed by other attempts to regain legitimacy, including the intervention of a new authority system, scapegoating and re-evaluation of performance goals. While it is not possible to comment with certainty regarding the eventual success of these strategies, it is clear that the mere correction of internal operations is not sufficienct.

The question is not will the Rogers Commission's recommendations make a difference in NASA's internal structures and thereby facilitate its ability to perform.

Rather, the issue is will the investigation process and solutions offered by the Rogers Commission help recreate the perception of NASA as a rational organization pursuing worthy goals with success. The Rogers Commision was established as a transitional authority to bring NASA from confusion and crisis to new order and rationality. Among other actions, the Commission identified likely scapegoats who were subsequently removed. The new order suggested by the Commission included fuller involvement of astronauts and engineers. The degree to which important external observers believe that this transition has actually occured and created rationality will be directly related to NASA's legitimacy. NASA's status as a public institution makes it highly dependent upon legitimacy for funding. The loss of Challenger compromised both Congressional and public support while creating yet a greater need for support to replace Challenger (Moffett and McGinley). Without the sense that NASA's new goals and processes are now legitimate, it is unlikely that necessary support and funding will be forthcoming ("Space Truck").

In dealing with the crisis and its consequences, NASA must recreate the perception that it is legitimate by reestablishing a sense of internal rationality and ability to perform. This is consistent with Meyer's suggestion that organizations often create structures which appear rational to external observers but which may have little actual correspondance to functional rationality (Meyers). Despite denials from administrators, a generalized pressure to

launch seems to have been a major factor in the decision to proceed with the Challenger flight. NASA's crisis, therefore, was in part percipitated by a need to maintain and enhance legitimacy through accelerated performance. NASA must now create structures which not only appear legitimate to observers but which are also able to perform according to obervers expectations for legitimacy.

Beyond rational systems which are able to perform adequately, NASA's long term legitimacy is dependent upon goals which correspond to values within the environment. "Without a target like the moon to shoot at, the agency struggled to find a new mission. It came up with the shuttle program which was to provide economical access to space. . ." (Brody 27). The mere capability to rocket into space, however, is an inadequate justification for the associated cost. Rather, this launch capability must exist to support the attainment of other goals (Magnuson). Successful satellite deployments soon become routine and mundane while the exclusive use of the Shuttle for military purposes creates a new opportunity for public criticism. Limiting NASA's scope of performance to the military may relieve some immediate performance pressure, but it does not solve the problem of legitimacy. The high adventure ideals of space exploration and exploitation seems too vague to create much wide spread enthusiasm and support. NASA needs some dramatic and concrete goal which will both capture and maintain public support. The New York Times, for example, recently proposed a joint Soviet Union/United States manned

mission to Mars as a goal for NASA's capabilities ("Space Truck"). NASA's peak as a legitimate institution came with the successful Apollo moon landing (Magnuson). Not only did the Apollo moon missions create wide spread enthusiasm, but they offered a concrete target for NASA's space travel capabilities. Such specific target goals would seem to be necessary if NASA hopes to repair the serious damage caused by the Challenger tragedy and re-establish itself as a legitimate institution.

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